

## Review of the genus *Meromyza* from China (Diptera: Chloropidae)

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A review of the species of the genus *Meromyza* from China is provided. Two species, *Meromyza gansuensis* sp. n. and *M. ningxiaensis* sp. n., are described as new to science. A key to the species of the genus from China is presented. The distribution of the genus in China is discussed.

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### 1. Introduction

The genus *Meromyza* Meigen belongs to the subfamily Chloropinae (Andersson 1977). It can be easily recognized by the typically yellow body with 3 brownish to black or bicolor stripes on the mesonotum, hind femur distinctly thickened with 2 rows of small black ventral warts, and hind tibia correspondingly curved with the femur. The members of the genus *Meromyza* are always associated with gramineous plants, such as *Agropyron*, *Agrostis*, *Alopecurus*, *Bromus*, *Calamagrostis*, *Dactylis*, *Deschampsis*, *Elymus*, *Festuca*, *Hordeum*, *Phleum*, *Poa* and *Sasa* (Kanmiya 1978). Several species attack cereal crops, and particularly *M. nigriventris* Macquart has been known as an economically important wheat pest in North China.

There are 88 species known from the world, of which 61 species are distributed in the Palaearctic Realm (Kanmiya 1983, Nartshuk 1984, 1992, 1994), 23 species in the Nearctic (Sabrosky 1987), three species in the Neotropics, and one in the Afrotropics (Sabrosky 1980, 1984).

Until now, only one species of *Meromyza* has been reported from the Oriental Realm (Sichuan,

China). In addition, we have a species from Guizhou, Southwestern China, which belongs to the Oriental Realm. However, only one female is available; therefore, we do not describe the species here.

Up to now, only five species are known to occur in China: *M. nigripes* Duda, *M. nigriventris* Macquart, *M. nigrofasciata* Hendel, *M. pratorum* Meigen, *M. saltatrix* (Linnaeus). *M. nigriventris* attacks young shoots of the wheat in North China, and *M. pratorum* solely lives associated with a gramineous plant near corn fields but does not attack the crops.

In this paper, the species of the genus *Meromyza* from China are reviewed, and two species are described as new to science. A key to the species from China is presented. The materials are deposited in the Entomological Museum of China Agricultural University (CAU), Beijing and the Museum of Biology, Zhongshan University (ZSU), Guangzhou.

### 2. Key to Chinese *Meromyza*

1. Palpus entirely black or infuscated on apical half 4

- Palpus entirely yellow, at most with infuscated extreme tip 2
- 2. Occiput entirely yellow; postnotum entirely yellow 3
- Occiput with brown spots; postnotum black  
*Meromyza nigrofasciata* Hendel, 1938
- 3. Middle stripe on mesonotum black and brown, extending to scutellum; epandrium with long bristles  
*Meromyza pratorum* Meigen, 1830
- Middle stripe on mesonotum entirely black and extending to scutellum; epandrium with short bristles *Meromyza gansuensis* sp. n.
- 4. Ocellar triangle and occiput not entirely blackish brown; thorax and abdomen mostly yellow 5
- Ocellar triangle and occiput entirely blackish brown; thorax and abdomen mostly black  
*Meromyza nigripes* Duda, 1933
- 5. Middle stripe on mesonotum extending to scutellum 6
- Middle stripe on mesonotum not extending to scutellum 7
- 6. Middle stripe on mesonotum entirely black; abdomen yellow with longitudinal black stripes; anterior gonite blunt apically  
*Meromyza saltatrix* (Linnaeus, 1761)
- Middle stripe on mesonotum black and brown, with black anteriormost portion; anterior gonite acute apically  
*Meromyza nigriventris* Macquart, 1835
- 7. Middle stripe on mesonotum not extending to scutellum; scutellum yellow without spot  
*Meromyza* sp.
- Middle stripe on mesonotum not extending to scutellum; scutellum yellow with a brownish spot  
*Meromyza ningxiaensis* sp. n.

### 3. Taxonomy

#### *Meromyza gansuensis* sp. n. (Fig. 1)

*Material examined.* Holotype ♂: China: Gansu, Minxian, 8.VII.1998, leg. J. Chen (CAU).

*Diagnosis.* Posterior part of ocellar triangle black. Occiput with brownish black spot. Palpus pale. Mesonotum with 3 black stripes, median one extending to scutellum. Scutellum yellow with black middle stripe. Epandrium pale, only

with small bristles. Gonite stout, posterior 0.5 times as wide as anterior.

*Description.* Head yellow with pale pollen, about 1.1 times as wide as long, and 1.2 times as wide as mesonotum; posterior portion of ocellar triangle black and its apex extending to anterior 0.8 times of length of frons; occiput with brownish black spot; face without any spots. Hairs and bristles on head black except gena with pale hairs; in profile, head 1.1 times as long as high; gena as wide as first flagellomere; parafacial as wide as gena; frons distinctly produced beyond eye by about 0.4 times as long as long axis of eye. Antenna blackish brown with pale pollen; first flagellomere brown on dorsal surface, and 1.2 times as long as wide; hairs on antenna pale. Proboscis pale yellow with pale hairs; palpus pale yellow with pale hairs.

Thorax yellow with pale pollen. Postpronotum with a rather small brown spot. Mesonotum (Fig. 1a) 1.3 times as long as wide, with 3 black stripes, median stripe extending to scutellum; thoracic pleura yellow, with a small black spot each on anepisternum and katepimeron, a large brownish spot on katepisternum; scutellum yellow with a black median stripe. Hairs and bristles on thorax black, but katepisternum with some long pale hairs.

Wing [broken apically] hyaline, veins brownish. Halter yellow.

Legs yellow with pale pollen. Hind femur 0.4 times as wide as long, and 1.8 times as wide as fore femur. Hairs and bristles on legs chiefly black except hind femur with some pale hairs.

Abdomen pale yellow with pale pollen, with 3 black spots on tergite 1 and black median stripes on tergites 2–4. Hairs on abdomen chiefly black, except some pale hairs present on venter. Genitalia (Fig. 1d–h): Epandrium yellow, as long as wide in posterior view, and 2 times as long as wide in lateral view; surstylus black, apically curved inward at a right angle; gonite black and broad, posterior about 0.5 times as wide as anterior.

*Length.* body 4.0 mm, wing about 3.0 mm.

*Female.* Resembles male in all details, but genitalia (Fig. 1b–c) are brownish, and tergite 9 nearly quadrate with some long hairs. Cerci stout with pale hairs. Length: body 3.6 mm, wing 3.1 mm.

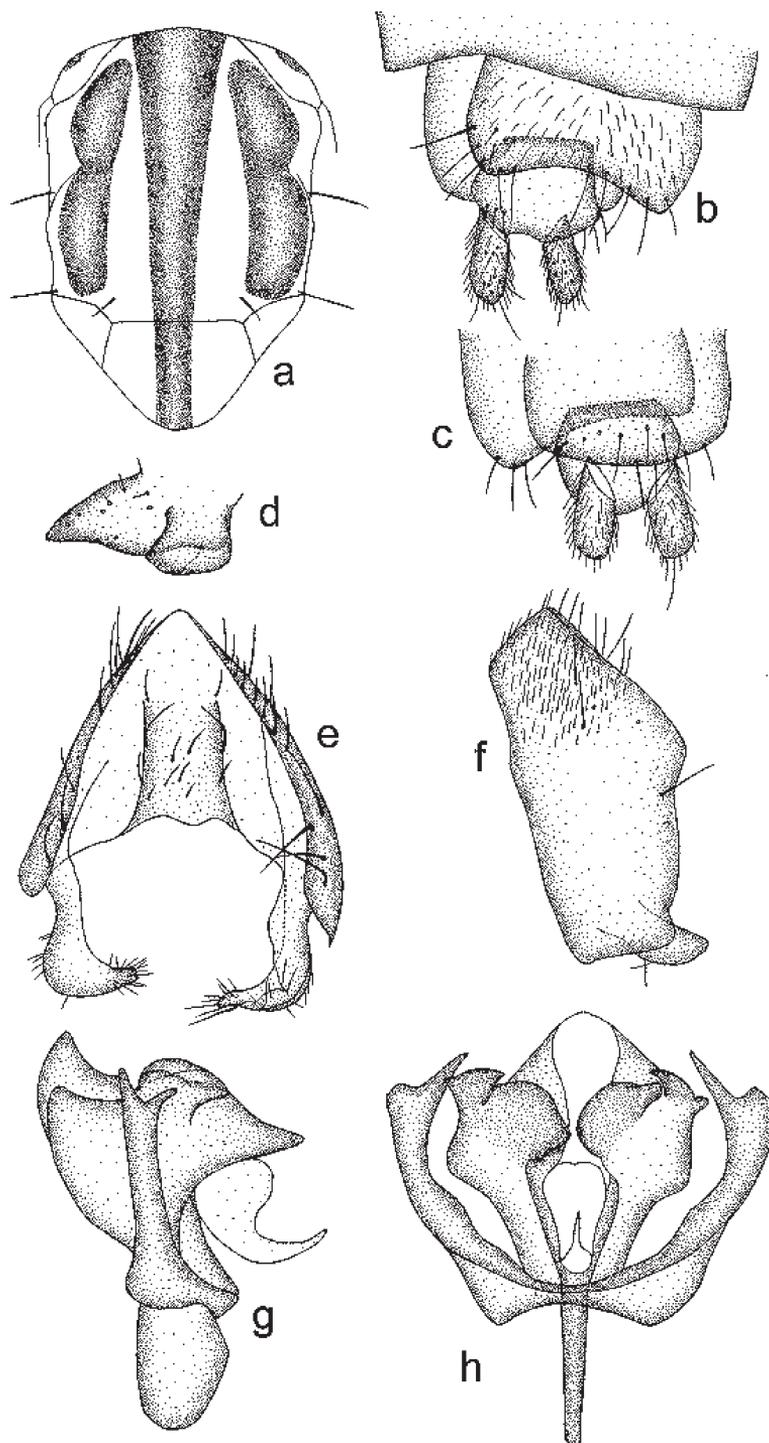


Fig. 1. *Meromyza gansuensis* sp. n., male and female. – a. Mesonotum, dorsal view. – b. Female abdominal terminalia, ventral view. – c. Female abdominal terminalia, dorsal view. – d. Gonite, lateral view. – e. Epandrium, posterior view. – f. Epandrium, lateral view. – g. Hypandrium and phallic complex, lateral view. – h. Hypandrium and phallic complex, ventral view.

*Differential diagnosis.* The new species is similar to *M. pratorum* Meigen, 1830 in having the pale palpus and large gonite, but can be sepa-

rated from the latter by the entirely black median stripe which extending to scutellum and short pale bristles on the epandrium. In *M. pratorum*,

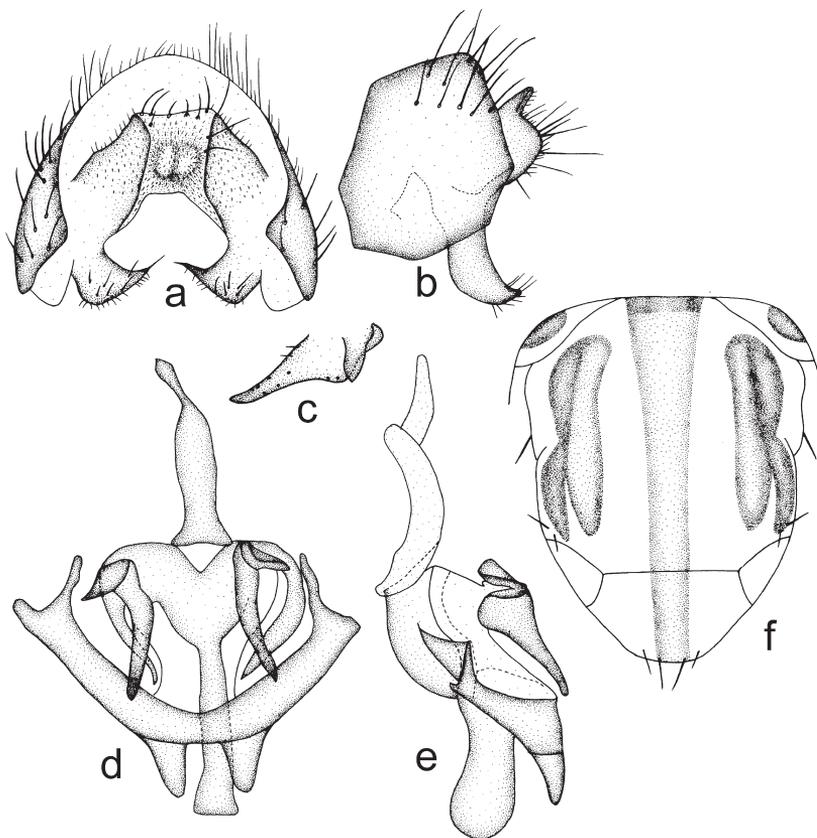


Fig. 2. *Meromyza nigri-ventris* Macquart, male. – a. Epandrium, posterior view. – b. Epandrium, lateral view. – c. Gonite, lateral view. – d. Hypandrium and phallic complex, ventral view. – e. Hypandrium and phallic complex, lateral view. – f. Mesonotum, dorsal view.

the median stripe on the mesonotum is black and brownish, not extending to the scutellum; the scutellum is yellow with a brownish spot; the epandrium has some long curved bristles (Kanmiya 1978).

*Distribution.* China (Gansu).

***Meromyza nigripes* Duda, 1933**

*Meromyza nigripes* Duda, 1933: 228 (as var. of *saltatrix* Linnaeus).

*Diagnosis.* Ocellar triangle and occiput entirely blackish brown; palpus entirely black. Mesonotum with a large fused black spot, and brownish laterally; pleuron dark brown. Fore and middle femora blackish brown with yellow apical portion, hind femur black. Abdomen blackish brown except tergites 2–5 with yellow posterior margins.

*Distribution.* China (Sichuan).

***Meromyza nigri-ventris* Macquart, 1835** (Fig. 2)  
*Meromyza nigri-ventris* Macquart, 1835: 590.

*Material examined.* 1 ♂: China: Gansu, Jonê, 15.VIII.1980, leg. J. Yang (CAU).

*Diagnosis.* Mesonotum yellow in ground color with 3 black and brownish stripes, median stripe extending to scutellum; scutellum yellow with brownish middle stripe. Surstylus attached to posterior corner of epandrium, curving backward in lateral view.

*Distribution.* Europe, the former area of Soviet Union; Asia: Iran, Mongolia, China (Gansu), Japan.

***Meromyza nigrofasciata* Hendel, 1938**

*Meromyza nigrofasciata* Hendel, 1938: 12.

*Diagnosis.* Palpus entirely yellow. Occiput yellow with brown spot. Postnotum black.

*Distribution.* China (Inner Mongolia).

***Meromyza ningxiaensis* sp. n.** (Fig. 3)

*Material examined.* Holotype ♂: China: Ningxia, Guyuan, 18.VIII.1980, leg. F. Li (CAU).

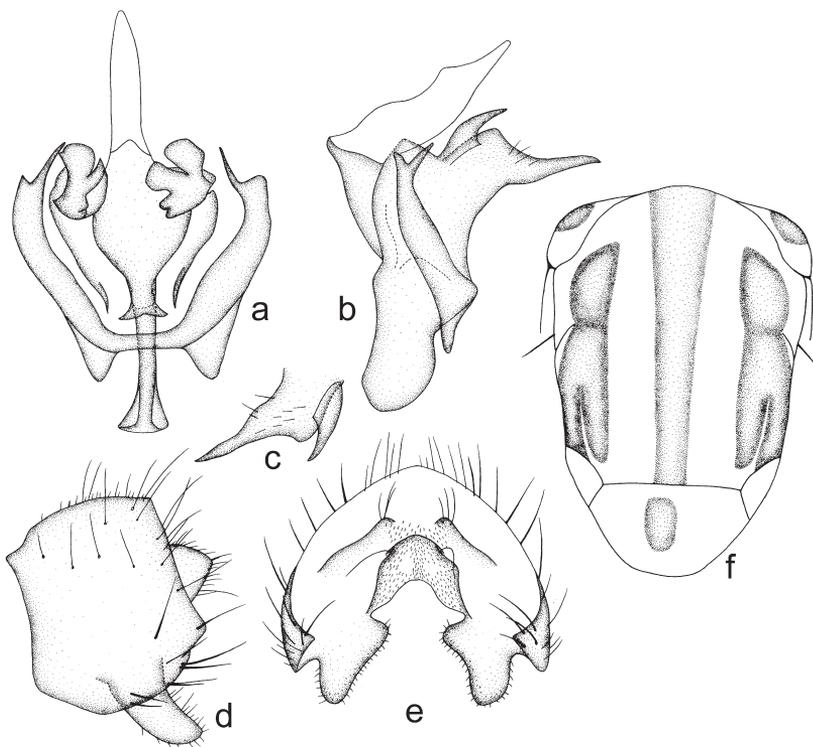


Fig. 3. *Meromyza ningxiaensis* sp. n., male. – a. Hypandrium and phallic complex, ventral view. – b. Hypandrium and phallic complex, lateral view. – c. Gonite, lateral view. – d. Epandrium, lateral view. – e. Epandrium, posterior view. – f. Mesonotum, dorsal view.

**Diagnosis.** Mesonotum yellow with 3 black stripes, median stripe not extending to scutellum; scutellum with median brown spot. Surstylus rounded distally; posterior and anterior part of gonite narrowing apically.

**Description.** Head brown with pale pollen, about 1.4 times as wide as long, and as wide as mesonotum; ocellar triangle concolorous with frons, its apex extending to anterior 0.4 times of length of frons; ocellar tubercle with sub-triangular black spot; face without any spots. Hairs and bristles on head black except gena with pale hairs; in profile, head 1.1 times as long as high; gena 0.9 times as wide as first flagellomere; parafacial 0.5 times as wide as gena; frons produced beyond eye by about 0.2 times as long as long axis of eye. Antenna brown with pale pollen; first flagellomere black on dorsal surface, and as long as wide; arista black with pale hairs. Proboscis pale yellow with pale hairs; palpus brown with black apical portion, pale haired.

Thorax yellow with pale pollen. Postpronotum with small black spot. Mesonotum (Fig.3f) as long as wide, with 3 black stripes, median stripe not extending to scutellum; thoracic

pleura yellow with a small black spot on anepisternum and a large reddish spot on katepisternum; scutellum yellow with a brown median spot. Hairs and bristles on thorax black, but katepisternum with some long pale hairs.

Wing hyaline, about 2.6 times as long as wide; veins brownish; relative length of costal section 2nd: 3rd: 4th as 3.1: 2.4: 2.2. Halter yellow.

Legs yellow with pale pollen. Hind femur 0.5 times as wide as long, and 2.3 times as wide as fore femur. Hairs and bristles on legs black, but hind femur with some long pale hairs.

Abdomen brown with pale pollen; each tergite with a median stripe except tergite 1 with three black spots. Hairs on abdomen chiefly pale. Genitalia (Fig.3a–e): Epandrium yellow, about 1.1 times as long as wide; surstylus stout, rounded distally, some long hairs present on anal plate; gonite dark brown, posterior and anterior acute apically.

**Length.** body 3.0 mm, wing 3.0 mm.

**Differential diagnosis.** The new species is similar to *M. nigriventris* Macquart, 1835 in having the acute anterior paramere, but can be separated from the latter by the entirely black median

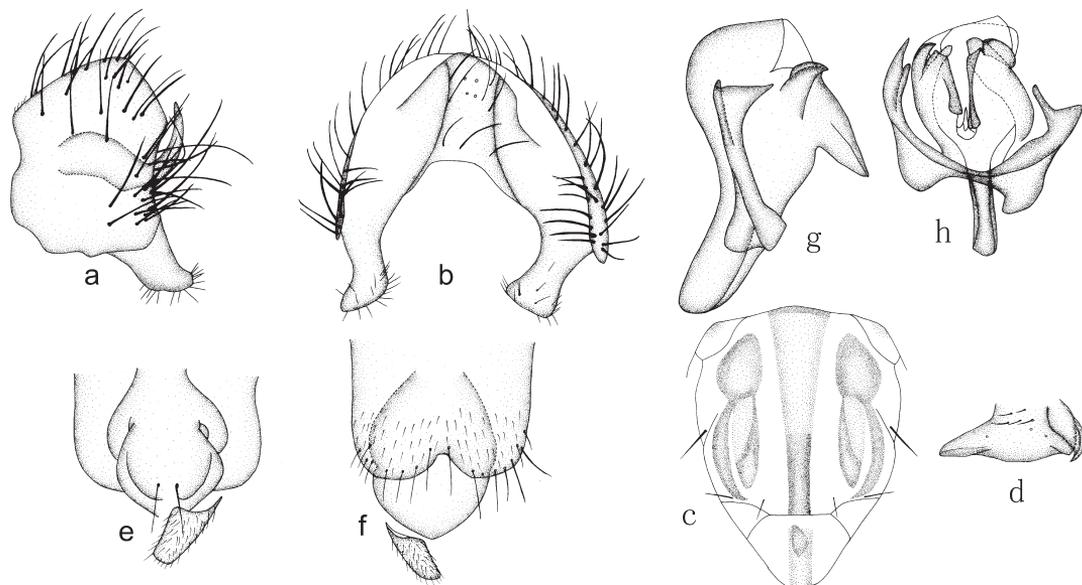


Fig. 4. *Meromyza pratorum* Meigen, male and female. – a. Epandrium, lateral view. – b. Epandrium, posterior view. – c. Mesonotum, dorsal view. – d. Gonite, lateral view. – e. Female abdominal terminalia, ventral view. – f. Female abdominal terminalia, dorsal view. – g. Hypandrium and phallic complex, lateral view. – h. Hypandrium and phallic complex, ventral view.

stripe on the mesonotum which not extending to the scutellum, rounded surstylus and acute posterior part of gonite. In *M. nigriventris*, the median stripe on the mesonotum is black and brownish, extending to the scutellum, the scutellum is yellow with a brownish stripe, and the surstylus is short and attached to the posterior corner of the epandrium, and the posterior paramere is elongated and triangular with nearly straight ventral edge (Ismay 1981).

*Distribution.* China (Ningxia).

***Meromyza pratorum* Meigen, 1830 (Fig. 4)**

*Meromyza pratorum* Meigen, 1830: 165.

*Material examined.* 5 ♂, 2 ♀: China: Gansu, Lanzhou, 18.VII.1984, leg. L. Liang (ZSU).

*Diagnosis.* Middle stripe on mesonotum black and brown, extending to scutellum. Epandrium with long bristles; surstylus small with rounded tip in dorsal view.

*Distribution.* Europe, the former area of Soviet Union; Asia: Mongolia, Japan, China (Gansu); North America.

***Meromyza saltatrix* (Linnaeus, 1761) (Fig. 5)**

*Musca saltatrix* Linnaeus, 1761, 2: 555.

*Material examined.* 1 ♂: China: Gansu, Lan-

zhou, 18.VIII.1984, leg. L. Liang (ZSU).

*Diagnosis.* Head brown. Mesonotum with 3 black stripes, median stripe extending to scutellum; scutellum brown with a black median stripe; postnotum black. Legs brown. Surstylus rounded distally.

*Distribution.* Europe, the former area of Soviet Union; Asia: Mongolia, China (Gansu); North America.

***Meromyza* sp.**

*Diagnosis.* Body brownish with heavy pollen. Three brown stripes present on mesonotum, median stripe not extending to scutellum; scutellum brownish. Each tergite with a median stripe except tergite 1 with 2 blackish spots on each side.

*Specimen examined.* 1 ♀: China: Guizhou, Luodian, 34.VI.1981, leg. F. Li (CAU).

*Distribution.* China (Guizhou).

**4. Discussion**

Until now, seven species (*M. gansuensis*, *M. nigripes*, *M. nigriventris*, *M. nigrofasciata*, *M. ningxiaensis*, *M. pratorum*, and *M. saltatrix*) of the genus *Meromyza* are known to occur in

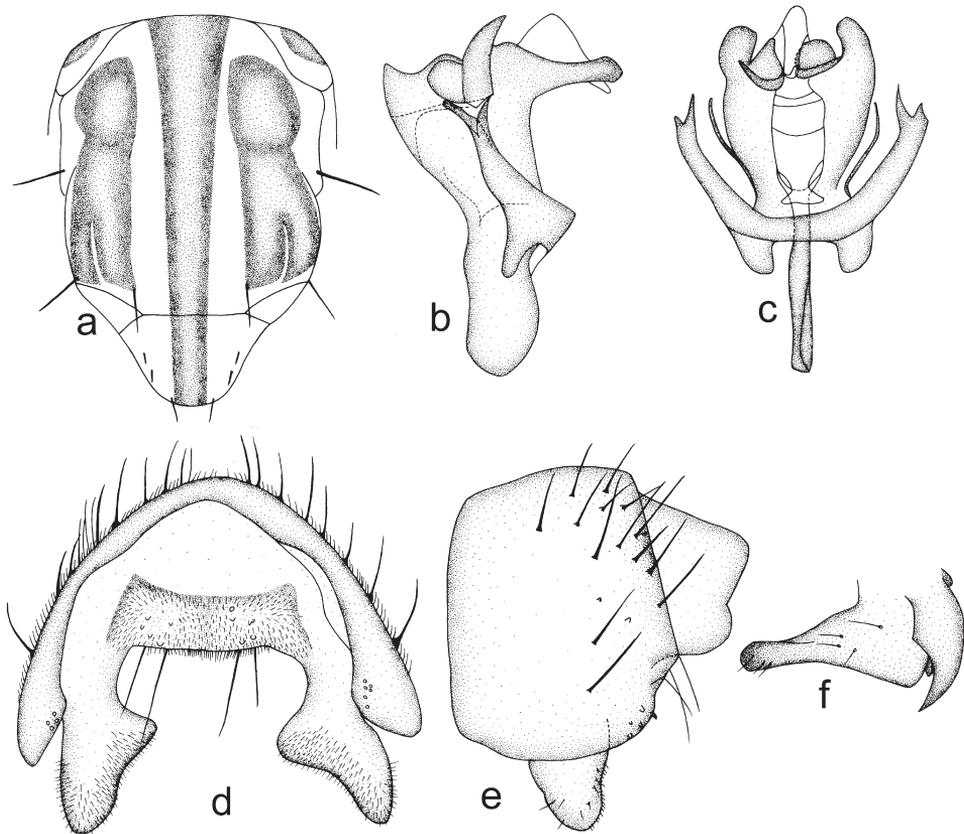


Fig. 5. *Meromyza saltatrix* (Linnaeus, 1761), male. — a. Mesonotum, dorsal view. — b. Hypandrium and phallic complex, lateral view. — c. Hypandrium and phallic complex, ventral view. — d. Epandrium, posterior view. — e. Epandrium, lateral view. — f. Gonite, lateral view.

China. Six of them are scattered in Northern China region of the Palaearctic Realm: *M. nigrofasciata*, *M. ningxiaensis*, *M. pratorum*, *M. saltatrix*, *M. gansuensis* in Loess plateau subregion (Neimeng, Gansu, Ningxia), and *M. nigriventris* in Qinghai-South Xizang subregion (Gansu: Jonê).

*M. nigripes* is scattered in the Western mountain subregion of Central China, an area that belongs to the Oriental Realm. Besides this, we have another unnamed species from Guizhou, Western mountain subregion of Central China, which also belongs to the Oriental Realm.

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